

DOCTOR BLADE

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Inventor(s): HAGITA SHUNICHI
Applicant(s):: DR SEISAKUSHO:KK
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Abstract

PURPOSE: To obtain a doctor blade useful for roll of paper machine, excellently doctoring without damaging the surface of roll, having excellent adhesivity, comprising a glass fiber-containing material bonded with a resin parent material.

CONSTITUTION: The objective doctor blade comprises a glass fiber-containing material, consisting essentially of glass yarn such as sheet arranged in one direction, woven fabric or nonwoven fabric made of filament bonded with a resin parent material such as epoxy resin. The content of the glass fibers is preferably 20-80wt.%.

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PARTIAL TRANSLATION:

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[Scope of the Patent Claim(s)]

[Claim 1] Doctor blade, characterized in that it is formed of a glass fiber-containing material with a structure in which the glass fiber as a major component is joined with a resin matrix material.

[Detailed Description of the Invention]

[0001]

[Area of Industrial Application] The present invention pertains to doctor blades that are used for scraping paper debris, etc., adhering to the surface of rolls such as papermaking rolls.

[0002]

[Conventional Techniques] A doctor device to scrape paper debris, etc., adhering to the surface of papermaking rolls, etc., is used to scrape paper debris, etc., continuously from the roll surface by pressing the edge of a doctor blade against a rotating roll surface with the appropriate contact pressure. For doctoring of this kind, the doctor blade must make appropriate contact with the roll surface. If the manner in which the edge of the doctor blade makes contact is unsuitable, problems may arise, e.g., the roll surface can be damaged, the edge of the doctor blade may undergo excessive wear, or the scraping may not be as thorough as possible.

[0003]

[Problems to be Solved by the Invention] Known doctor blades are typi-

cally made of metals or resins. When using doctor blades made of metal, the roll surface can be damaged more easily than when using doctor blades made of resin. What is more, when doctor blades made of resin are used, the edge contact with the roll surface may not be uniform, and because of loss due to wear, the service life of these blades is generally short.

[0004] The object of the present invention is to proffer a doctor blade that can solve the problems of the conventional doctor blades made of metals and made of resins.

[0005]

[An Approach to Solving the Problems] According to the present invention, a material containing glass fiber as a major component is used as the material of the doctor blade. More specifically, the doctor blade is designed to be manufactured by using a glass fiber-containing material in which glass fiber as a major component is joined with a resin matrix material. It goes without saying that, apart from glass fiber, fiber such as carbon fiber may be incorporated.

[0006] The glass fiber to be used in the present invention may be of any form. For example, the glass fiber can be made into unidirectionally arranged sheets comprising long fibers, fabrics, and nonwoven fabrics. The fiber length of the glass fiber is not particularly critical; long fibers, short fibers, or continuous fibers that can be obtained by extrusion by melt blow-out processes, etc., can be used. As to the fiber thickness of the glass fiber, fibers from fine microfibers to thick fibers can be used. Examples of resin matrix materials include thermosetting resins such as epoxy resins, phenolic resins, and polyimide resins, and thermoplastic resins such as PEEK, PES, PPS, PBT, nylon, and polycarbonates.

[0007] A thermosetting resin such as mentioned above is used to impregnate an aggregate of glass fibers, such as sheet, fabric, or nonwoven fabric made of glass fiber, and this is cured by heating and pressing to form a plate-like laminate, and a doctor blade can be formed by using this. Alternatively, a thermoplastic film is impregnated in a glass fiber aggregate, and this is formed by heating and pressing, and a doctor blade can be manufactured by using the plate-like formed product thus obtained.

[0008] It is desirable to adjust the content of glass fiber generally to 20-80 weight%, considering the rigidity, static electricity, and self lubricating property of the doctor blade. Furthermore, the thickness of the doctor blade finally obtained is adjusted generally to about 0.1-10 mm.

[0009]

[Advantages of the Invention] It was ascertained that the doctor blade of the present invention is capable of making advantageous close contact with the surface of papermaking rolls, etc. Furthermore, it was ascertained that satisfactory doctoring can be achieved without damaging the surface of the papermaking roll. Even further, it was ascertained that the amount of wear is also small. Thus, by using the doctor blade of the present invention, the problems of conventional doctor blades made of metals and made of resins can be solved.